WINSTAR Display

OLED SPECIFICATION

Model No:

WEO12864W#AGP3N0Y000-FC

Represented by:

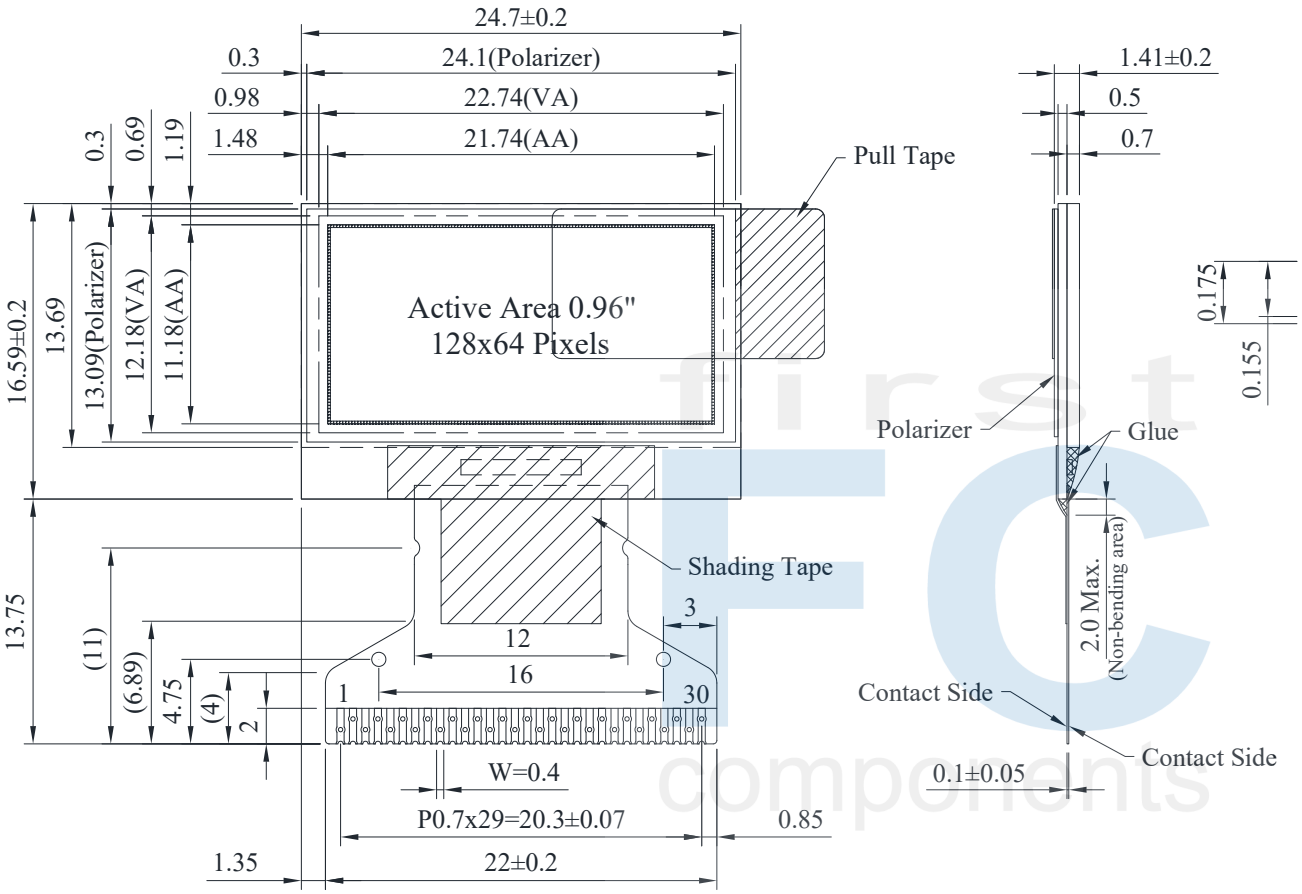
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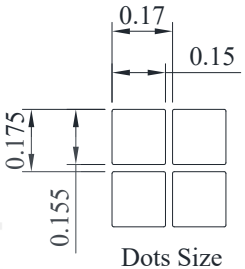
2.General Specification

Item	Dimension	Unit
Dot Matrix	128 × 64 Dots	—
Module dimension	24.7 × 16.59 × 1.41	mm
Active Area	21.74 × 11.18	mm
Pixel Size	0.15 × 0.155	mm
Pixel Pitch	0.17 × 0.175	mm
Display Mode	Passive Matrix	
Display Color	White	
Drive Duty	1/64 Duty	
IC	SSD1315	
Interface	6800,8080,SPI,I2C	
Size	0.96 inch	

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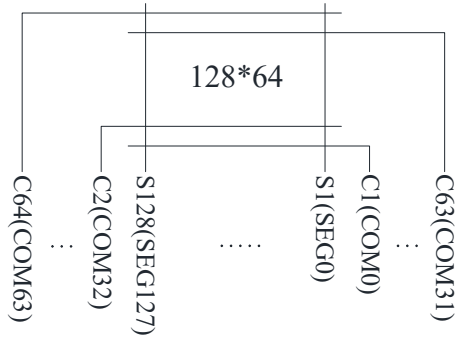
3. Contour Drawing & Block Diagram





Dots Size
Scale 20/1

PIN	SYMBOL	PIN	SYMBOL
1	NC(GND)	16	R/W#
2	C2P	17	E/RD#
3	C2N	18	D0
4	C1P	19	D1
5	C1N	20	D2
6	VBAT	21	D3
7	NC	22	D4
8	VSS	23	D5
9	VDD	24	D6
10	BS0	25	D7
11	BS1	26	IREF
12	BS2	27	VCOMH
13	CS#	28	VCC
14	RES#	29	VLSS
15	D/C#	30	NC(GND)



Seg&Com Layout

The non-specified tolerance of dimension is ±0.3mm.

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4.Interface Pin Function

<table>
<tr><th>No.</th><th>Symbol</th><th>Function</th></tr>
<tr><td>1</td><td>N.C.
(GND)</td><td>The supporting pins can reduce the influences from stresses on the function pins.
These pins must be connected to external ground.</td></tr>
<tr><td>2</td><td>C2P</td><td rowspan="4">C1P/C1N – Pin for charge pump capacitor; Connect to each other with a capacitor.
C2P/C2N – Pin for charge pump capacitor; Connect to each other with a capacitor.</td></tr>
<tr><td>3</td><td>C2N</td></tr>
<tr><td>4</td><td>C1P</td></tr>
<tr><td>5</td><td>C1N</td></tr>
<tr><td>6</td><td>VBAT</td><td>This is the power supply pin for the internal buffer of the DC/DC voltage converter. It must be connected to external source when the converter is used. It should be connected to VDD when the converter is not used.</td></tr>
<tr><td>7</td><td>NC</td><td>NC</td></tr>
<tr><td>8</td><td>VSS</td><td>This is a ground pin.</td></tr>
<tr><td>9</td><td>VDD</td><td>Power supply pin for core logic operation.</td></tr>
<tr><td>10</td><td>BS0</td><td rowspan="3">These pins are MCU interface selection input. See the following table:
<table>
<tr><th></th><th>BS0</th><th>BS1</th><th>BS2</th></tr>
<tr><td>I2C</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>3-wire SPI</td><td>1</td><td>0</td><td>0</td></tr>
<tr><td>4-wire SPI</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>8-bit 68XX Parallel</td><td>0</td><td>0</td><td>1</td></tr>
<tr><td>8-bit 80XX Parallel</td><td>0</td><td>1</td><td>1</td></tr>
</table></td></tr>
<tr><td>11</td><td>BS1</td></tr>
<tr><td>12</td><td>BS2</td></tr>
<tr><td>13</td><td>CS#</td><td>This pin is the chip select input connecting to the MCU.
The chip is enabled for MCU communication only when CS# is pulled LOW (active LOW).</td></tr>
<tr><td>14</td><td>RES#</td><td>This pin is reset signal input. When the pin is low, initialization of the chip is executed. Keep this pin HIGH (i.e. connect to VDD) during normal operation.</td></tr>
<tr><td>15</td><td>D/C#</td><td>This pin is Data/Command control pin connecting to the MCU.
When the pin is pulled HIGH, the data at D[7:0] will be interpreted as data.
When the pin is pulled LOW, the data at D[7:0] will be transferred to a command register.
In I2C mode, this pin acts as SA0 for slave address selection.
When 3-wire serial interface is selected, this pin must be connected to VSS.</td></tr>
<tr><td>16</td><td>R/W#</td><td>This is read / write control input pin connecting to the MCU interface.
When interfacing to a 6800-series microprocessor, this pin will be used as Read/Write (R/W#) selection input. Read mode will be carried out when this pin is pulled HIGH (i.e. connect to VDD) and write mode when LOW.
When 8080 interface mode is selected, this pin will be the Write (WR#) input. Data write operation is initiated when this pin is pulled LOW and the chip is selected.
When serial or I2C interface is selected, this pin must be connected to VSS.</td></tr>
</table>

17	E/RD#	This pin is MCU interface input. When 6800 interface mode is selected, this pin will be used as the Enable (E) signal. Read/write operation is initiated when this pin is pulled HIGH and the chip is selected. When 8080 interface mode is selected, this pin receives the Read (RD#) signal. Read operation is initiated when this pin is pulled LOW and the chip is selected. When serial or I2C interface is selected, this pin must be connected to VSS.
18~25	D0~D7	These pins are bi-directional data bus connecting to the MCU data bus. Unused pins are recommended to tie LOW. When serial interface mode is selected, D2 should be either tied LOW or tied together with D1 as the serial data input: SDIN, and D0 will be the serial clock input: SCLK. When I2C mode is selected, D2, D1 should be tied together and serve as SDAout, SDAin in application and D0 is the serial clock input, SCL.
26	IREF	When external IREF is used, a resistor should be connected between this pin and VSS to maintain the IREF current at a maximum of 30uA. When internal IREF is used, this pin should be kept NC.
27	VCOMH	COM signal deselected voltage level. A capacitor should be connected between this pin and VSS.
28	VCC	Power supply for panel driving voltage. This is also the most positive power voltage supply pin. When charge pump is enabled, a capacitor should be connected between this pin and VSS.
29	VLSS	This is an analog ground pin. It should be connected to VSS externally.
30	NC (GND)	The supporting pins can reduce the influences from stresses on the function pins. These pins must be connected to external ground.

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5.Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Notes
Supply Voltage for Logic	VDD	0	4	V	1,2
Charge Pump Regulator Supply Voltage	VBAT	-0.3	6.0	V	1,2
Supply Voltage for Display	VCC	0	18.0	V	1,2
Operating Temperature	TOP	-30	+70	°C	—
Storage Temperature	TSTG	-30	+70	°C	—

Note ：

1. All the above voltages are on the basis of “VSS = 0V”.
2. When this module is used beyond the above absolute maximum ratings, permanent breakage of the module may occur. Also, for normal operations, it is desirable to use this module under the conditions according to Section 6 ‘’Electrical Characteristics’’. If this module is used beyond these conditions, malfunctioning of the module can occur and the reliability of the module may deteriorate.
3. The absolute limit temperature was verified according to the test conditions of reliability test (See section 9. Reliability) , and module was met all criteria.

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6.Electrical Characteristics

6.1 DC Electrical Characteristics

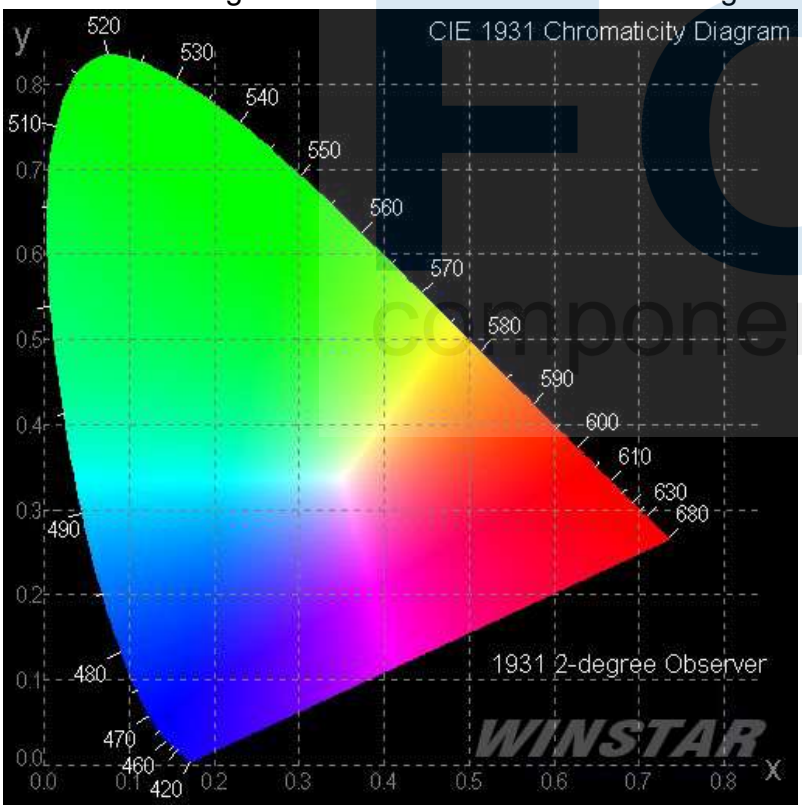
Item	Symbol	Condition	Min	Typ	Max	Unit
Supply Voltage for Logic	VDD	—	1.65	3.0	3.3	V
Supply Voltage for Display (Supplied Externally)	VCC	—	7.5	—	8.0	V
Charge Pump Regulator Supply Voltage	VBAT	—	3.0	3.5	4.5	V
Charge Pump Output Voltage for Display (Generated by Internal DC/DC)	Charge Pump VCC	—	7.0	7.5	—	V
Input High Volt.	VIH	—	0.8×VDD	—	—	V
Input Low Volt.	VIL	—	—	—	0.2×VDD	V
Output High Volt.	VOH	—	0.9×VDD	—	—	V
Output Low Volt.	VOL	—	—	—	0.1×VDD	V
Operating Current for VCC (Display 50% Pixel on) (VCC Supplied Externally)	ICC	VCC =7.5V	—	5.0	10	mA
Display 50% Pixel on (VCC Generated by Internal DC/DC)	IBAT	VBAT=3.5V	—	15	22.5	mA

Note：The VCC (VPP) value can be adjusted according to the demand brightness. When VCC (VPP) is lowered, the brightness decreases or when VCC (VPP) is increased, the brightness increases. The VCC (VPP) value is set within the recommended range. The life time of OLED is directly related to the set brightness, and lower brightness helps to improve the life time.

7.Optical Characteristics

Item	Symbol	Condition	Min	Typ	Max	Unit
View Angle	(V)θ	—	160	—	—	deg
	(H)φ	—	160	—	—	deg
Contrast Ratio	CR	Dark	10,000:1	—	—	—
Response Time	T rise	—	—	10	—	μs
	T fall	—	—	10	—	μs
Display with 100% checkerboard Brightness(1)			90	120	—	cd/m^2
CIEx(White)		(CIE1931)	0.24	0.28	0.32	—
CIEy(White)		(CIE1931)	0.28	0.32	0.36	—

Note 1：The brightness value is based on the setting of VCC(VPP) equal to the Typical value.



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